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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,694	09/07/2007	Toshio Yoshihara	920_097	9473

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EXAMINER	
ROBINSON, ELIZABETH A	
ART UNIT	PAPER NUMBER
1787	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,694	YOSHIHARA ET AL.	
	Examiner	Art Unit	
	Elizabeth A. Robinson	1787	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-20,24 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-20,24 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 4-20, 24 and 25 are currently pending.

Specification

The amendment filed May 16, 2011 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The specific cleaner was originally a part of the specification. The amendment removing the specific cleaner broadens the disclosure to any weakly alkaline cleaner. It is noted that changing the wording to that originally filed would overcome this rejection (reinserting the cleaner name and manufacturer without the word "e.g." in front of the cleaner name).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

Claims 2, 5, 6, 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "said binder" in line 3. There is insufficient antecedent basis for this limitation in the claim. There is no binder claimed in claim 1 from which this claim depends. Claims 24 and 25 depend from claim 2 and thus, are also rendered indefinite.

Claim 5 recites the limitation "said binder" in line 1. There is insufficient antecedent basis for this limitation in the claim. There is no binder claimed in claim 1 from which this claim depends. Claim 6 depends from claim 5 and thus, is also rendered indefinite.

Claim Rejections - 35 USC § 102/103

Claims 1, 4-8, 12, 14-18 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Niimi et al. (WO/03/027189). The Examiner is using Yoshihara et al. (US 2005/0038137), hereafter referred to as Yoshihara '137, as the English language equivalent of the World document.

Regarding claim 1, Yoshihara '137 (Paragraphs 218-228) teaches an antireflective laminate comprising a base material, additional layers and an outermost low refractive index layer. The substrate layer should have a transmittance closest to transparency (Paragraph 227). The materials that the layer is formed from (Paragraph 202) include inherently transparent materials such as triacetate cellulose, acryl based resins and polycarbonate, for example. The low refractive index layer (abstract) comprises inorganic superfine particles. The particles (Paragraphs 131-132) have a

particle size of 1 to 500 nm, preferably 1 to 100 nm. The particles can have a polymer grafted to the surface (Paragraphs 143-165), with di- or more functional reactive groups which can be the same as the ionizing radiation curable group of the binder. These groups include groups such as acrylic groups (Paragraph 90). The method for grafting and type of polymer grafted appear to be the same as that of the instant application and thus, would hydrophobitize the particle in the same manner as in the instant application.

Regarding claim 4, particles treated with a hydrophobic polymer would not be fully wetted with water.

Regarding claims 5 and 6, the low refractive index layer (abstract) can also comprise a binder that comprises an ionizing radiation cured group and a polar group. The polar group (Paragraph 91) can be a hydroxyl group.

Regarding claims 7 and 8, the low refractive index layer (Paragraph 102) can also comprise a fluorine containing compound comprising a completely fluorinated alkyl group.

Regarding claim 12, the low refractive index layer has a refractive index of 1.45 or less (Paragraph 46).

Regarding claims 14 and 15, the intermediate layer can be a hardcoat layer or a high- or middle- refractive index layer that has hardcoat characteristics, which have refractive indices that meet the limitations of claim 15 (Paragraphs 219-222).

Regarding claim 16 and 18, the hardcoat layer (Paragraph 220) can comprise a filler that makes the layer have internal diffusibility to reduce glare (anti-dazzling agent).

Regarding claims 17 and 20, either an antistatic layer can be provided on the substrate or the hardcoat, high-refractive index layer or middle-refractive index layer can have an antistatic agent (Paragraph 223).

Claims 1, 2, 4-8, 10-12, 14 and 16-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nakamura et al. (US 2003/0202137).

Regarding claim 1, Nakamura (Paragraphs 116-125) teaches an antireflection film comprising a transparent support (3) and low refractive index layer (2) that is provided on the outermost surface of the high refractive index layer (1). The low refractive index layer comprises fine particles (Paragraphs 192-196) such as silica particles having an average particle size of 0.5 to 200 nm, most preferably 5 to 40 nm, and a binder (Paragraphs 209-212). The fine particles are subjected to a surface treatment by a coupling agent (Paragraphs 213-232) and then the binder polymer is bonded to the surface treating agent (Paragraph 210). This would attach (graft) the polymer binder to the surface of the particles through the coupling agent. The polymers can include polyethers and have acrylate groups. The type of polymers appears to be the same as that of the instant application and thus, would hydrophobitize the particle in the same manner as in the instant application.

Regarding claim 2, Nakamura (Paragraph 265 and Figure 5c) teaches that the low-refractive index layer can have an overcoat layer that covers the unevenness of the surface of the low-refractive index layer and provides a continuous layer (renders the

outermost surface smooth). The polymer of the overcoat layer is taught in Paragraphs 271-273. These polymers can be the same as the binder in the low refractive index layer (Paragraphs 484-489) and include acrylate components having more than one functional group. Thus, the laminate can have a layer comprising the binder and particles and a layer formed of said binder alone.

Regarding claim 4, since the particles have been provided with a hydrophobic surface treatment they would not be fully wetted with water.

Regarding claims 5 and 6, the binder resin of the low refractive layer is taught in Paragraphs 234-235 and includes ionizing radiation curing resins containing hydroxyl functional groups.

Regarding claim 7, Nakamura (Paragraphs 484-485) teaches that the low refractive index layer can have a fluorine or silicon series containing compound.

Regarding claim 8, Nakamura (Paragraph 488) teaches fluorocompounds that meet the limitations of the instant claim.

Regarding claim 10, Nakamura (Paragraph 498) teaches that a coating layer can be present in the voids of the low refractive index layer and can be comprise a fluorine-containing silane (Paragraph 273) that meets the limitations of the instant claim.

Regarding claim 11, Nakamura (Paragraph 330) teaches that the contact angle with water of the surface of the side having the low-refractive index layer is preferably 90 degrees or more.

Regarding claim 12, Nakamura (Paragraph 243) teaches that the low-refractive index layer preferably has a refractive index of 1.30 to 1.55. This range overlaps the range of the instant claim.

Regarding claim 14, Nakamura (Paragraph 458) teaches that there can be a hardcoat layer between the base material and the low refractive index layer.

Regarding claims 16 and 18, Nakamura (Paragraph 501) teaches that the hardcoat layer can have anti-glare (anti-dazzling) properties.

Regarding claim 17, Nakamura (Paragraph 284) teaches that an antistatic layer can be provided on the transparent support.

Regarding claim 19, Nakamura (Paragraph 125 and Figure 1c) teaches that there can also be a middle-refractive index layer between the transparent substrate and the low-refractive index layer. The refractive index of the middle-refractive index layer is preferably 1.65 to 1.85 (Paragraph 187) and the layer has a thickness of 5-200 nm (0.005 to 0.2 microns) (Paragraph 189).

Regarding claim 20, Nakamura (Paragraph 280) teaches that an antistatic agent can be added to any of the layers or coating solutions of the anti-reflection film.

Claim Rejections - 35 USC § 103

Claims 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 2003/0202137).

As stated above, Nakamura teaches an antireflective laminate that meets the limitations of claim 1.

Regarding claim 9, Nakamura (Paragraph 498) teaches that a coating layer can be present in the voids of the low refractive index at less than 70% by volume. It is preferred to increase the molecular weight of the coating layer, in order to lower the volume percentage of the coating in the voids. The lower volume percentage is preferred, in order to preserve the refractive index of the low refractive index layer. This lubricating coating layer can comprise an organosiloxane (Paragraph 492).

Nakamura does not explicitly teach the values for m and n.

It would be obvious to one of ordinary skill in the art to choose the molecular weight (thus the values of m and n), in order to obtain a desired refractive index for the low refractive index layer, while still providing an external lubrication layer.

Regarding claim 15, Nakamura (Paragraphs 253 and 257) teaches the polymers and fillers used to form the hard coat layer. The filler is added to the hard coat layer to adjust the refractive index and hardness of the layer (Paragraph 475).

Nakamura does not explicitly teach the refractive index of the hardcoat layer.

However, due to the refractive indices of the polymers and fillers, the materials of the hardcoat layer should provide coatings that meet the refractive index limitations of the instant claim or it would be obvious to one of ordinary skill in the art to vary the filler and filler loading to obtain a desired refractive index and hardness for the hardcoat layer.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 2003/0202137) in view of Yoshihara et al. (JP 2002-079600), hereafter referred to as Yoshihara '600.

As stated above, Nakamura teaches an antireflective laminate that meets the limitations of claim 1. Nakamura (Paragraph 378) further teaches that the low refractive index layer should have a low haze percentage, preferably less than 1%.

Nakamura does not teach the surface roughness values for the outer surface of the low refractive index layer.

Yoshihara '600 (Paragraphs 16-17) teaches that a low-refractive index layer should have the surface roughness controlled to a ten point mean roughness of 100 nm or less and an arithmetic mean roughness of 2 to 10 nm in order to obtain a haze of 1% or less.

It would have been obvious to one of ordinary skill in the art at the time of the invention to control the surface roughness of Nakamura to a ten point mean roughness of 100 nm or less and an arithmetic mean roughness of 2 to 10 nm, in order to obtain a haze of 1% or less as taught by Yoshihara '600.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 2003/0202137) in view of Matsunaga et al. (WO 2004/017105) and Yoshihara et al. (JP 2002-079600).

As stated above, Nakamura teaches an antireflective laminate that meets the limitations of claim 1. It is desired that the low refractive index layer have a refractive

index lower than the refractive index of the polymer and particle material (Paragraphs 205 and 206).

Nakamura does not teach the silica particles having a void.

Matsunaga (Pages 29 and 30) teaches that hollow silica particles have an effective refractive index of 1.17 to 1.40. This is lower than the refractive index of solid silica particles.

It would be obvious to one of ordinary skill in the art to use the hollow silica particles as in Matsunaga, as the silica of particles of Nakamura, in order to ensure that the low refractive index layer has a sufficiently low refractive index.

The antireflective laminate of Nakamura has a low refractive layer with an overcoat layer. The low refractive index layer has a thickness of 30 to 200 nm (Paragraph 244). The thickness of the overcoat layer is 1-50 nm (Paragraph 278). Thus, the ratio of thicknesses of the first layer (low refractive index layer) to the thickness of the second layer (overcoat layer) can meet the claimed ratios. The polymer for the low refractive index layer (Paragraphs 234 and 235) preferably comprises monomers having two or more ethylenically unsaturated groups and can be acrylates having three or more functional groups. These compounds are curable with ionizing radiation. Nakamura (Paragraph 34) further teaches that the antireflection film should have excellent abrasion resistance.

Nakamura gives a broad range of monomers and includes monomers having less than three ionizing radiation curable functional groups.

Yoshihara ‘600 (Paragraph 6) teaches a low-refractive index layer coated on a glass or plastic substrate. The composition is an anti-reflection laminate (abstract). The low-refractive index layer (Paragraph 7) comprises an ultrafine particle whose mean diameter is 5-100 nm and an acrylic compound (binder). Yoshihara’600 (Paragraphs 14 and 15) teaches that trifunctional or greater acrylate components provide a higher crosslinking density and add greater hardness and abrasion resistance to the low refractive index layer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trifunctional or higher acrylate monomers of Yoshihara ‘600, as the acrylate component the low refractive index and overcoat layers of Nakamura, in order to increase the hardness and abrasion resistance of these outmost layers of the antireflection film.

Response to Arguments

Applicant's arguments filed May 16, 2011 have been fully considered but they are not persuasive.

Due to amendments to the specification, the previous objection to the specification is withdrawn and replaced by that presented above.

Applicant argues that Nakamura et al. (US 2003/0202137) does not teach the hydrophobitizing of the particles with a hydrophobilic polymer. However, Nakamura teaches that the fine particles are subjected to a surface treatment by a coupling agent (Paragraphs 213-232) and then the binder polymer is bonded to the surface treating

agent (Paragraph 210). This would attach (graft) the polymer binder to the surface of the particles through the coupling agent. The polymers can include polyethers and have acrylate groups. The type of polymers appears to be the same as that of the instant application and thus, would hydrophobitize the particle in the same manner as in the instant application.

Applicant argues that graft treating the particles with a hydrophobilic polymer provides unexpected alkaline resistance. However, this result is not commensurate in scope with the claims as the results are only for the specific polymers of the examples and not for the more broadly claimed limitation of claim 1 which could be any hydrophobilic polymer. Further, it is noted that coupling agents also provided superior alkaline resistance, so it appears that the results are not limited to treating the particles with a polymer.

Applicant argues that WO '105 and JP '600 each do not disclose hydrophobitized particles as claimed. However, WO '105 and JP '600 are each used as a teaching reference, and therefore, it is not necessary for these secondary references to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather each reference teaches a certain concept, and in combination with the primary reference, discloses the presently claimed invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Robinson whose telephone number is (571)272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. A. R./
Elizabeth Robinson
Examiner, Art Unit 1787

July 22, 2011

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1787